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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/807,348

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7590

10/18/2005

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EXAMINER

ISAAC, STANETTA D

ART UNIT

PAPER NUMBER

2812

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/807,348	Applicant(s) TAKASAKI ET AL.	
	Examiner Stanetta D. Isaac	Art Unit 2812	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 17-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/24/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to the election filed on 7/29/05. Currently, claims 1-22 are pending.

Election/Restrictions

Applicant's election without traverse of claims 1-16 in the reply filed on 7/29/05 is acknowledged.

Claims 17-22 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 7/29/05.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

The information disclosure statement (IDS) was submitted on 3/24/04. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Specification

The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is indefinite, in claim 1, line 9, whether “the adhesive” is applied to the spacer (framed-shaped) or to a wafer. In addition, it is indefinite, in claim 1, lines 13-14, whether “the transfer member” is on “the transparent substrate” or the “spacer”.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Badehi US Patent US Patent 6,777,767 in view of Spooner et al., Patent Application Publication US 2002/0096743.

Badehi discloses the semiconductor method substantially as claimed. See figures 1A-10B, and corresponding text, where Badehi shows, pertaining to claim 1, a method for manufacturing a solid-state imaging device **100/200** by sticking transparent substrate **114**, in which plural frame-shaped spacers **116/216/306** are formed via an adhesive to a wafer **102/202/404** on which plural solid-state imaging elements are formed, and by dividing the transparent substrate and the wafer for each solid-state imaging element (figure 5H-5I), each of the solid-state imaging elements on the wafer being surrounded by each of the spacers, the method comprising the steps of: to which the adhesive **118** is applied to the spacer **116** (figures 2A, 2C and 5A; col. 3, lines 43-53; col. 4, lines 10-22, lines 63-67); applying pressure to the transparent substrate (figure 5B; col. 5, lines 5-12); and transfer the adhesive on the spacer (figures 2A, 2C and 5A; col. 3, lines 43-53; col. 4, lines 10-22, lines 63-67). In addition Badehi shows, pertaining to claim 10, further comprising the step of carrying out surface modification to the surface of the spacer to which the adhesive is applied (figures 2A, 2C and 5A; col. 3, lines 43-53; col. 4, lines 10-22, lines 63-67). Also, Badehi shows, pertaining to claim 16, wherein the spacer is bonded to the wafer over the surface to which the adhesive is applied (figures 2A, 2C and 5A; col. 3, lines 43-53; col. 4, lines 10-22, lines 63-67).

However, Badehi fails to show, pertaining to claim 1, sticking a transfer member to which the adhesive is applied to the spacer; and releasing the transfer member from the transparent substrate to transfer the adhesive on the spacer. In addition, Badehi fails to show,

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pertaining to claims 2 and 3, wherein the transfer member is a rigid body such as a glass plate.

Also, Badehi fails to show, pertaining to claims 4 and 5, wherein the transfer member is an

elastic body such as a flexible plastic film. Badehi fails to show, pertaining to claim 6, wherein

the transfer member is peeled off such that the angle between the transfer member and the

transparent substrate is kept constant. In addition, Badehi fails to show, pertaining to claim 7,

further comprising the step of forming a ridged pattern or a recess pattern in the transfer member,

the ridge pattern or the recess pattern being the same pattern as the spacers in the transparent

substrate. Also, Badehi fails to show, pertaining to claim 8, further comprising the step of

applying a release agent on the surface of the transfer member. Badehi fails to show, pertaining

to claim 9, wherein the release agent is silicon. In addition, Badehi fails to show, pertaining to

claim 11, wherein the viscosity of the adhesive is 0.1 Pa·S or more when the adhesive is applied

to the transfer member. Also, Badehi fails to show, pertaining to claim 12, wherein the adhesive

is applied to the transfer member by bar coating, blade coating or spin coating. Badehi fails to

show, pertaining to claim 13, wherein pressure is applied to the transfer member and the

transparent substrate by air pressure or roller pressure. In addition, Badehi fails to show

pertaining to claim 14, wherein the viscosity of the adhesive is 100 Pa·S when the adhesive is

transferred to the spacer from the transfer member. Finally, Badehi fails to show, pertaining to

claim 15, wherein the adhesive has the thickness from 0.5 μm to 5.0 μm after the adhesive is

activated.

Spooner teaches, in figures 1-42, and corresponding text, a similar method of manufacturing a semiconductor device where an adhesive material is in contact with the spacers.

Specifically, pertaining to claim 1, sticking a transfer member to which the adhesive is applied to

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the spacer; and releasing the transfer member from the transparent substrate to transfer the adhesive on the spacer; pertaining to claims 2 and 3, wherein the transfer member is a rigid body such as a glass plate; pertaining to claims 4 and 5, wherein the transfer member is an elastic body such as a flexible plastic film; pertaining to claim 6, wherein the transfer member is peeled off such that the angle between the transfer member and the transparent substrate is kept constant; pertaining to claim 7, further comprising the step of forming a ridged pattern or a recess pattern in the transfer member, the ridge pattern or the recess pattern being the same pattern as the spacers in the transparent substrate; pertaining to claim 8, further comprising the step of applying a release agent on the surface of the transfer member; pertaining to claim 9, wherein the release agent is silicon; pertaining to claim 12, wherein the adhesive is applied to the transfer member by bar coating, blade coating or spin coating; pertaining to claim 13, wherein pressure is applied to the transfer member and the transparent substrate by air pressure or roller pressure (paragraphs [0107-0108] and [0112-0115]).

It would have been obvious to one of ordinary skill in the art to substitute, the following steps of: sticking a transfer member to which the adhesive is applied to the spacer; and releasing the transfer member from the transparent substrate to transfer the adhesive on the spacer; wherein the transfer member is a rigid body such as a glass plate; wherein the transfer member is an elastic body such as a flexible plastic film; wherein the transfer member is peeled off such that the angle between the transfer member and the transparent substrate is kept constant; further comprising the step of forming a ridged pattern or a recess pattern in the transfer member, the ridge pattern or the recess pattern being the same pattern as the spacers in the transparent substrate; further comprising the step of applying a release agent on the surface of the transfer

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member; wherein the release agent is silicon; wherein the adhesive is applied to the transfer member by bar coating, blade coating or spin coating; wherein pressure is applied to the transfer member and the transparent substrate by air pressure or roller pressure, in the method of Badehi, pertaining to claims 1-9 12 and 13, according to the teachings of Spooner, with the motivation that, a transfer member, as taught by Spooner, can be included in the formation of the adhesive layer on the spacers. In addition, both Badehi and Spooner teach bonding the transparent substrate and a wafer substrate by using spacers that have an adhesive material formed thereon. Therefore, transferring the adhesive on the spacers that includes a transfer member would prove to be equivalent, since the ultimate goal would be to form an adhesive material onto the spacers, for the purpose of later bonding the transparent substrate and the wafer substrate together.

It would have been obvious to one of ordinary skill in the art to incorporate, the following steps of: wherein the viscosity of the adhesive is 0.1 Pa·S or more when the adhesive is applied to the transfer member; wherein the viscosity of the adhesive is 100 Pa·S when the adhesive is transferred to the spacer from the transfer member; wherein the adhesive has the thickness from 0.5 μm to 5.0 μm after the adhesive is activated, in the method of Badehi, pertaining to claims 11, 14 and 15, according to the combined teachings of Badehi in view of Spooner, with the motivation that Badehi in view of Spooner teach the formation of an adhesive layer formed on spacers. Therefore, having the above viscosities and thickness would result in routine experimentation.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stanetta D. Isaac whose telephone number is 571-272-1671. The examiner can normally be reached on Monday-Friday 9:30am -6:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on 571-272-1873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Stanetta Isaac
Patent Examiner
October 14, 2005


MICHAEL LEBENTRITT
SUPERVISORY PATENT EXAMINER